CLAIMS

1. An image data processor for controlling the number of bits for assignment to each GOP (group of pictures) of to-be-coded image data for transition of the bit occupancy in a VBV (video buffering verifier) buffer, used in decoding with the MPEG technique, to a target value, the apparatus comprising:

a calculating means for calculating the initial value of a bit occupancy in the VBV buffer on the basis of auxiliary data read from a recording medium;

a comparing means for making a comparison between the target and initial values of the bit occupancy; and

a controlling means for controlling the number of bits for assignment to each GOP correspondingly to the result of comparison.

2. The apparatus according to claim 1, wherein:

the comparing means determines a difference between the target and initial values of the bit occupancy; and

the controlling means controls the number of bits for assignment to each GOP on the basis of a value resulted from division of the difference determined by the comparing means by the number of GOPs.

3. The apparatus according to claim 1, wherein the controlling means further assigns the number of bits assigned to each GOP to each of pictures included in the GOP correspondingly to the type of a picture.

4. The apparatus according to claim 1, wherein the calculating means reads, from

the recording medium, a next VBV delay (VBV_delay_N) to be inserted as the auxiliary data.

5. The apparatus according to claim 1, wherein in case the initial value of the bit occupancy is smaller than the target one, the controlling means inserts at least one copy picture repeatedly representing a previous picture to before an *I* picture.

6. The apparatus according to claim 5, wherein in case the initial value of the bit occupancy is smaller than a set value R, the controlling means determines an initial value VBV_delay_S of a video encoder correspondingly to a VBV_delay_N, number (N) of copy pictures to be inserted, display time (ET) for the copy picture and a transfer time (FT) of the copy picture.

7. The apparatus according to claim 6, wherein the initial value VBV_delay_S is calculated based on the following formula:

$$VBV\_delay\_S = VBV\_delay\_N + N \times (ET - FT)$$

8. The apparatus according to claim 5, wherein the number (N) of copy pictures to be inserted is as given by the following formula:

$$N \geq (\text{Set value } R - VBV\_delay\_N)/(ET - FT)$$

9. The apparatus according to claim 4, wherein:

the comparing means reads a VBV delay (VBV_delay_I) of an *I* picture at the top of externally entered image data; and

the controlling means inserts at least one copy picture to before the *I* picture correspondingly to a difference between the VBV_delay_N and VBV_delay_I or

inserts a stuffing byte.

10. The apparatus according to claim 9, wherein in case the difference between the VBV_delay_N and VBV_delay_I is 0 or less, the controlling means inserts only the stuffing byte without insertion of any copy picture.

11. The apparatus according to claim 9, wherein in case the difference between the VBV_delay_N and VBV_delay_I is larger than 0, the controlling means inserts at least one copy picture and a stuffing byte.

12. The apparatus according to claim 4, wherein in case the last picture recorded in the recording medium is a *P* picture, the controlling means corrects the VBV_delay_N correspondingly to the size of a sequence header and that of a GOP header.

13. An image data processing method of controlling the number of bits for assignment to each GOP (group of pictures) of to-be-coded image data for transition of the bit occupancy in a VBV (video buffering verifier) buffer, used in decoding with the MPEG (Moving Picture Experts Group) technique, to a target value, the method including, according to the present invention, the steps of:

calculating the initial value of a bit occupancy in the VBV buffer on the basis of auxiliary data read from a recording medium;

making a comparison between the target and initial values of the bit occupancy; and

controlling the number of bits for assignment to each GOP correspondingly to the result of comparison.

14. The apparatus according to claim 13, wherein:

a difference between the target and initial values of the bit occupancy is determined; and

the number of bits for assignment to each GOP is controlled on the basis of a value resulted from division of the difference determined by the comparing means by the number of GOPs.

15. The apparatus according to claim 13, wherein the number of bits assigned to each GOP is further assigned to each of pictures included in the GOP correspondingly to the type of a picture.

16. The apparatus according to claim 13, wherein a next VBV delay (VBV_delay_N) to be inserted is read as the auxiliary data from the recording medium.

17. The apparatus according to claim 13, wherein in case the initial value of the bit occupancy is smaller than the target one, at least one copy picture repeatedly representing a previous picture is inserted to before an *I* picture.

18. The apparatus according to claim 17, wherein in case the initial value of the bit occupancy is smaller than a set value R, an initial value VBV_delay_S of a video encoder is determined correspondingly to a VBV_delay_N, number (N) of copy pictures to be inserted, display time (ET) for the copy picture and a transfer time (FT) of the copy picture.

19. The apparatus according to claim 18, wherein the initial value VBV_delay_S is

calculated based on the following formula:

$$VBV\_delay\_S = VBV\_delay\_N + N \times (ET - FT)$$

20. The apparatus according to claim 17, wherein the number (N) of copy pictures to be inserted is as given by the following formula:

$$N \geq (\text{Set value } R - VBV\_delay\_N)/(ET - FT)$$

21. The apparatus according to claim 16, wherein:

a VBV delay (VBV_delay_I) of an *I* picture at the top of externally entered image data is read; and

at least one copy picture is inserted to before the *I* picture correspondingly to a difference between the VBV_delay_N and VBV_delay_I or inserts a stuffing byte.

22. The apparatus according to claim 21, wherein in case the difference between the VBV_delay_N and VBV_delay_I is 0 or less, only the stuffing byte is inserted without insertion of any copy picture.

23. The apparatus according to claim 21, wherein in case the difference between the VBV_delay_N and VBV_delay_I is larger than 0, at least one copy picture and a stuffing byte are inserted.

24. The apparatus according to claim 16, wherein in case the last picture recorded in the recording medium is a *P* picture, the VBV_delay_N is corrected correspondingly to the size of a sequence header and that of a GOP header.